

***Middle Eel River
Watershed Management Plan***

SECTION 1

INTRODUCTION

1/6/11

Middle Eel River Watershed Management Plan

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1.1 Global & National Freshwater Resources

Clean water is vital to life, it is essential for human survival. Freshwater accounts for only 2.5% of the total water on the planet, much of which is unavailable due to being locked up in glaciers and ice caps. Usable fresh surface water in the form of lakes and rivers accounts for only 0.3% of the total freshwater on the planet (Figure 1-1). It is essential to conserve and protect this very limited and precious natural resource.

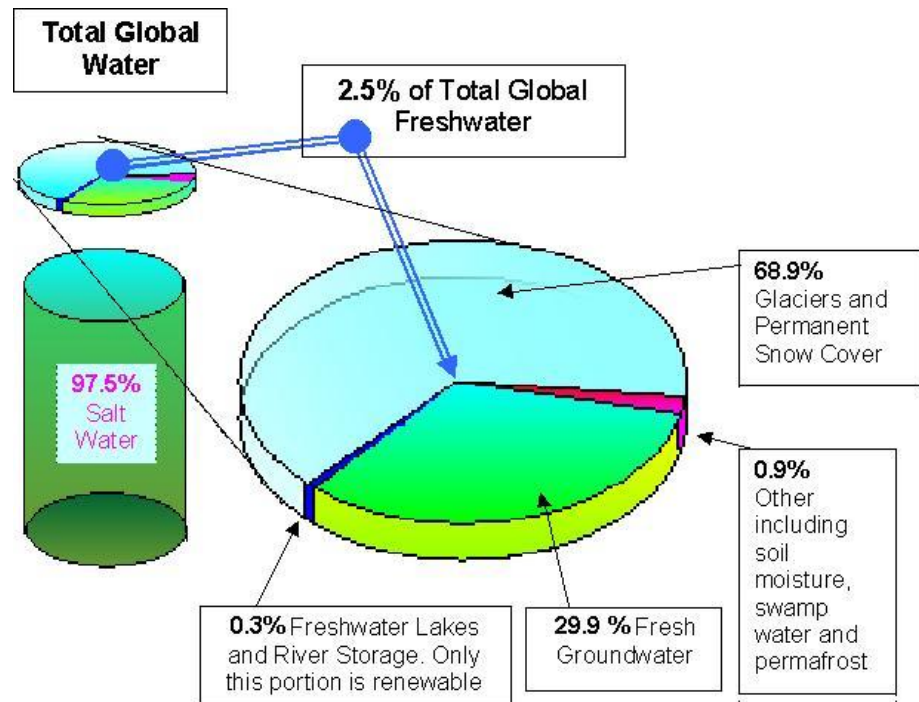


Figure 1-1. UNESCO World Water Resources at the Beginning of the 21st Century.

In the United States, there are more than 3.5 million miles of rivers and streams that are of tremendous value not only to the human population, but also as habitat for aquatic life. Only 25% (870,758 miles) of rivers and streams in the United States have been evaluated for water quality standards and 45.8% (398,556 miles) of those assessed are impaired or threatened (USEPA National Summary Water Quality Attainment in Assessed Rivers and Streams 2006).

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1.2 Indiana Impaired Waters

All states are required to develop and submit a list of impaired waters to USEPA for approval under the Clean Water Act (CWA) Sections 305(b) and 303(d) every two years. River and stream miles in Indiana are assessed by the Indiana Department of Environmental Management (IDEM) for designated beneficial uses and are considered to be impaired if they do not meet standards set by the state for these uses. The 2008 IDEM assessments are listed in Table 1-1, with total designated miles varying with the specific beneficial use. There are 35,673 miles of rivers, streams, ditches, and drainage ways in Indiana.

Table 1-1. Individual Use Support Summary – Indiana Streams.
(Indiana Integrated Water Monitoring and Assessment Report 2008 p. 45).

Designated Beneficial Use	Total Miles Designated	Miles Assessed	Percent Assessed	Miles Fully Supporting	Miles Not Supporting	Percent Assessed Impaired
Aquatic Life Use	32,141	17,535	54.6%	13,913	3,622	21%
Fishable Uses	32,170	4,465	13.9%	1,044	3,420	77%
Drinking Water Supply	102	1	1.0%	0	1	100%
Recreational Use (Human Health)	32,173	12,073	37.5%	3,700	8,374	69%

Nonpoint source (NPS) pollution (indirect or scattered sources of pollution that enter a water system through pathways such as drainage or runoff from agricultural fields) is the leading cause of impairment in Indiana rivers and streams, negatively affecting over 6,300 miles (Indiana Integrated Water Monitoring and Assessment Report 2008 p. 48). Degraded water quality negatively affects property values, recreational uses, human and animal health, biotic communities, and our quality of life. Clean water is an essential element to our economic, mental and physical well being.

NPS pollution, unlike pollution from industrial and sewage treatment plants, comes from many diffuse sources. NPS pollution is caused by rainfall or snowmelt moving over and through the ground. As the run-off moves, it picks up and carries away natural and human-made pollutants, finally depositing them into lakes, rivers, wetlands, coastal waters, and even underground sources of drinking water. These pollutants include:

- excess fertilizers, herbicides, and insecticides from agricultural lands and residential areas;
- oil, grease, and toxic chemicals from urban run-off and energy production;
- sediment from improperly managed construction sites, crop and forest lands, and eroding stream banks;
- salt from irrigation practices and acid drainage from abandoned mines; and,
- bacteria and nutrients from livestock, pet wastes, and faulty septic systems.

Atmospheric deposition (airborne chemical compounds settling onto the land or water surface) and hydromodification (the alteration of the natural flow of water through a landscape) are also sources of NPS pollution.

The origins of NPS pollutants are diffuse and often difficult to trace. Human-related origins of NPS pollution that have been identified as most prevalent in Indiana include:

- animal production operations and feedlots;
- agricultural activities;
- stream bank and shoreline erosion;
- timber harvesting;
- land development;
- on-site sewage disposal units;
- solid waste disposal landfills;
- transportation-related facilities;
- coal mining;
- oil and gas production;
- non-energy mineral extraction; and,
- atmospheric deposition.

Figure1-2 shows the sources of stressors for Indiana's impaired streams by year and miles impacted (IDEM nd).

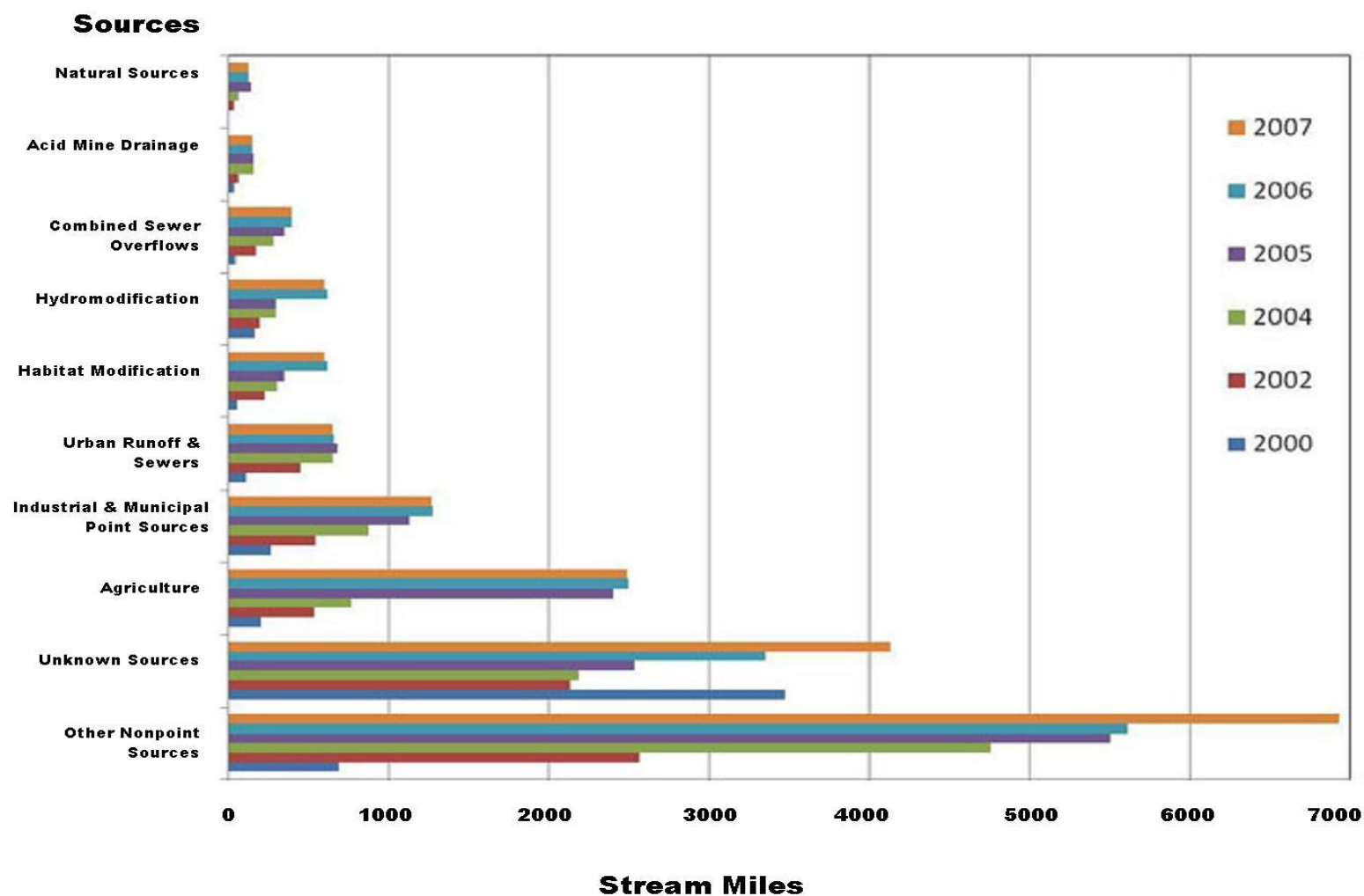


Figure 1-2: Sources of Stressors Impairing Indiana's Streams by year and miles impacted.

1.3 The Watershed Approach

A watershed is an area or region of land that catches precipitation that falls within that area, and funnels it to a particular creek, stream, or river, eventually the water drains into an ocean. Watersheds come in all shapes and sizes, with some only covering an area of a few acres while others are thousands of square miles across.

Watersheds have unique addresses known as hydrologic unit codes (HUCs) which identify their location. The smaller the HUC the larger the watershed, an 8 digit HUC is larger than a 12 digit HUC. The boundaries are geographically defined, ignoring political boundaries. Watersheds are nested within each other as shown below which demonstrates the way a 12 digit HUC may be nested within an 8 digit HUC (Fig. 1-3).

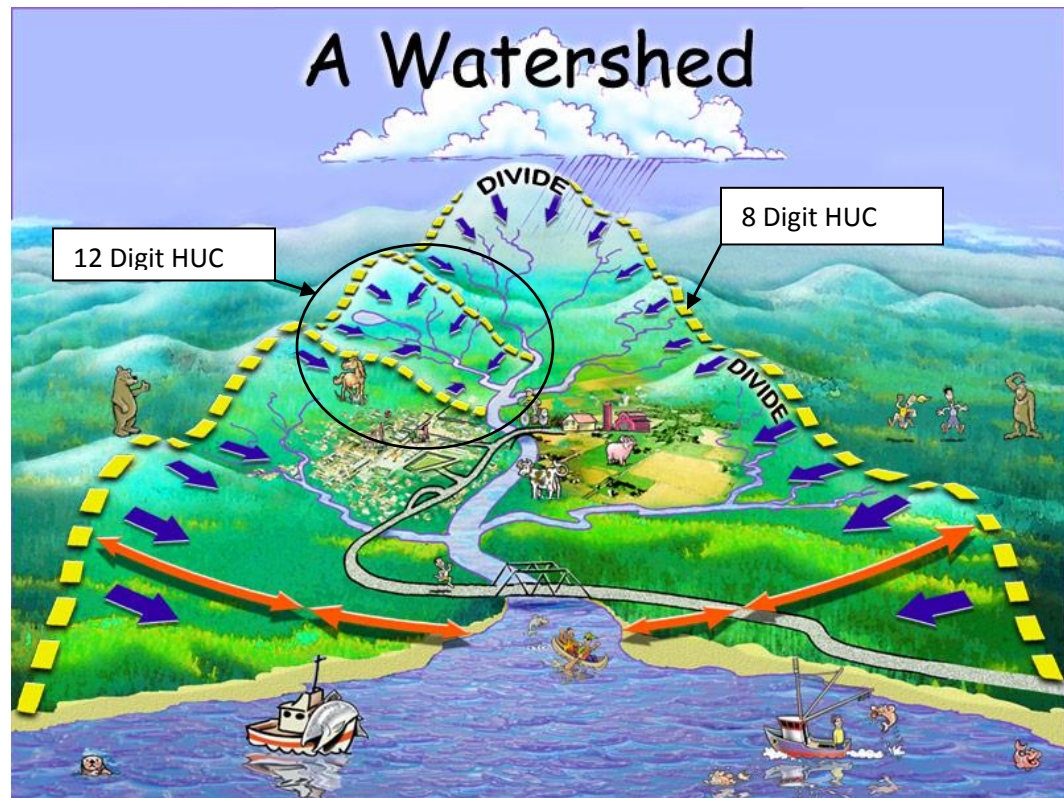


Figure 1-3. Delineation of a watershed. The yellow dashed lines indicate a single watershed. Notice how the smaller subwatershed is within the larger watershed. (RecycleWorks n.d.)

Nonpoint source pollution occurs when it rains or when snow melts and water washes over the land and impervious (incapable of being penetrated) surfaces such as roads, parking lots and compacted soil and removes all of the oil, debris, soil and fertilizer from those surfaces. The water and pollutants then runoff the land or are washed into storm sewers where they flow untreated to the nearest river, lake or groundwater.

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Because these pollutants come from several sources instead of one discharge point, it is nonpoint source pollution.

The environmental impacts are gradual, but severe. Over time, the pollutants build up in the waterway and settle in the tissue of fish, sediment bottom and the banks of rivers. Water becomes murky and polluted, rendering it unsafe for people to swim or fish in.

Sediment - ordinary soil - is the number one pollutant of our nation's waterways. When soil enters a waterway as a result of erosion, it prevents sunlight from reaching aquatic plants, clogs fish gills, chokes other organisms, smothers fish spawning beds and negatively affects nursery areas.

Chemical fertilizers contain phosphorous, a nutrient that helps plants grow. Using excessive amounts of fertilizer or applying it close to a shoreline causes the phosphorus to run off. Once in the waterway, the phosphorus feeds algae, causing it to grow rapidly. Large amounts of algae reduce oxygen levels in the water and compromise overall water quality.

Everyone, in some way, contributes to nonpoint source pollution through regular household activities.

You don't have to live near water for your actions to affect water quality. A drop of oil spilled miles from a river will eventually find its way into the ground water, river or lake.

The watershed approach is a flexible framework for managing water resource quality within a specified area. It includes stakeholder involvement and management actions supported by sound science. The watershed plan is a strategy that provides assessment and management information for a geographically defined watershed, including the analysis, actions, participants, and resources related to developing and implementing the plan.

Using a watershed approach to restore impaired waters is beneficial because it addresses the problems in a holistic manner and stakeholders are actively involved in selecting the management strategies that will be implemented to solve the problems.

1.4 Middle Eel River Watershed Management Plan

The Middle Eel River Watershed Management Plan is a comprehensive and collaborative effort that provides a framework for coordinating activities and efforts within the Middle Eel River Watershed to achieve the following mission statement developed by the Steering Committee:

“To protect and enhance the water resources of the Middle Eel River Watershed through education and implementation of soil and water conservation practices”.

The Middle Eel River Watershed Management Plan addresses nonpoint source water pollution of the Middle Eel River by:

- Documenting current water quality conditions, biological integrity and physical characteristics
- Identifying potential causes and sources of pollution
- Identifying strategies to improve water quality
- Raising awareness through a public education and outreach campaign

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1.5 Middle Eel River Watershed History

Early in 2007 Manchester faculty began questioning the possibility of a cooperative project that would address the Eel River's water quality. This led to discussions involving Wabash and Miami County Natural Resources Conservation Service (NRCS), Manchester faculty, and IDEM to investigate the possibility of attaining a CWA Section 319 Grant to address water quality concerns in the Eel River. A core group was formed consisting of representatives from Miami County Soil and Water Conservation District (SWCD), Miami County NRCS, Wabash County SWCD, Wabash County NRCS, Indiana Department of Natural Resources (IDNR) Division of Fish and Wildlife, and Manchester College. This core group met numerous times over the course of several months from April 2007 to December 2008. The meetings culminated in Manchester College applying for a CWA Section 319 grant on March 14, 2008.

Without the talented and dedicated effort and support of the core group and our partners, this grant would not have been possible. The partners include businesses, agencies and individuals who are stakeholders within the watershed and are listed in Appendix A.

Notification of grant approval was received by Manchester College on December 12, 2008. The core group met and hired a Watershed Coordinator in December, 2008 to begin work on the project January 1, 2009.

Early in the planning process the Steering Committee for the Middle Eel River Watershed Management Plan (MERWMP) was formed by the core group and the addition of two stakeholders/landowners from Miami County, and two stakeholders/landowners from Wabash County. Kosciusko County SWCD and NRCS joined the group in November 2009.

The Steering Committee meets bimonthly (every other month) to guide the development of the MERWMP and serves as a technical resource to the Watershed Coordinator. In addition to the Steering Committee, two sub-committees were formed: the Education and Outreach Sub-Committee, and the Technical Sub-Committee. The Education and Outreach Sub-Committee meets as needed to coordinate volunteer activities and community outreach, and to encourage public participation. The Technical Sub-committee meets as needed to direct, review, and manage water quality testing analysis for the MERWMP. The Steering Committee and Sub-committees include representatives from Wabash, Miami and Kosciusko Counties SWCDs and NRCS, IDNR Division of Fish and Wildlife, local landowners/farmers, and Manchester College. Steering Committee members are listed in Appendix B.

1.6 Public Participation

To encourage citizen participation, the public was invited to attend Steering Committee meetings. News releases announcing dates and times of the Steering Committee meetings were sent to the local media prior to each meeting. A list of the local news outlets utilized for meeting announcements is listed in Appendix C.

The first annual public meeting was held on Monday, March 16, 2009 at the Honeywell Center in Wabash. Flyers were mailed to partners and churches within the watershed, distributed to libraries and downtown establishments of North Manchester, Peru and Wabash, and an announcement was sent to local media (Appendix C). During this meeting the public was encouraged to ask questions or make comments regarding water quality concerns in the Middle Eel River Watershed. The purpose of this meeting was to gather information from the public, to inform the public about the Middle Eel River Watershed Initiative, and to educate the public about the current water quality conditions through a panel of experts. This was an important initial step in involving the public in the planning process and raising awareness within the watershed. A summary of the meeting is outlined below.

MERWMP – Summary of 1st Public Meeting March 16, 2009

Forty four people attended our first Public Meeting at the Honeywell Center in Wabash, IN, March 16th, 2009. A brief overview of the Initiative was followed by presentations from a panel of experts on the following topics:

- Watershed Management – Angie Brown – IDEM – Watershed Specialist
- Historical Geology – Bill Eberly – President N. Manchester Historical Society
- Fish Communities of the Eel – Ed Braun – DNR District 4 Fisheries Biologist
- *E. coli* – Dr Dave Kreps – Ph. D. Microbiology/Manchester College Professor of Biology
- Suspended sediment – Dr. Jerry Sweeten- Ph.D. Stream Ecology – Director Environmental Studies, Manchester College
- Best Management Practices – Joe Updike and Rick Duff – NRCS Conservationists, Wabash & Miami Counties.

After the presentations there was a period of time for questions and answer. The following questions/comments were raised:

- Concerns about small communities pumping their sewage directly into the river, and failing septic systems.
- Streambank erosion
- Concerns about Flowers Creek and if we were going to be testing there.

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- Concerns from a person who lives outside the watershed regarding the possibility of us testing their water. This participant was directed to continue the discussion with Angie Brown from IDEM.
- The question was raised about dam removal and if it is an effective method to improve water quality.

A comment card was handed out upon arrival, and participants were encouraged to complete and return the cards at the end of the meeting. Seventeen cards were completed by participants, a summary of comments received are listed below:

- 14 participants checked the box to be added to our mailing list
- 6 participants checked the box to be added to our volunteer list

How people heard about the meeting

- 2 gave no information
- 1 from the mailing sent to partners
- 1 from the flyers displayed in downtown establishments
- 1 from his work place
- 3 from individual contacts
- 9 from the newspaper announcements

Comments from cards:

- “Just interested in this great project – thanks!”
- “I live next to the river in North Manchester, my kids want to fish and swim in the river but I am hesitant to let them. I have canoed the river and I want to see the river thrive in general.”
- “It may be helpful to have periodic releases with recent data results.”
- “Amphibian and reptile surveys on the Eel River?”
- “I am 70 years old. The Eel River has been a part of my life for at least 60 years – fishing with my grandfather, hunting along its banks and canoeing.”
- “We have been at odds with In Drainage Laws through our adjacent upstream farmer/neighbors in Whitley County. As an artist I walk the Hurricane several times a week and I see first- hand the impact of lagoon pumping, ditch debrushing/spraying with our fish kills – “nutrient’ build-up – brown water, loss of frogs, 30 years ago clear water – can see fossils – now all life coated and life there much diminished. – We are technically upstream from your project, but I guarantee you are affected. We own a farm 140 acres directly along Hurricane Creek. I attended the Whitley County Drainage Board Meeting this am. They are planning massive ‘debrushing’ and spraying over the coming months and of course, some upstream from us (and you as well). Riparian zones are “in the way” of

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cropland in Whitley County. Over protest, they remove even fruit trees from home-owners yards so they don't have "drainage problems". And South Whitley sewer treatment plant is on the curve where State Road 14 leaves town to the west. It's completely under water in floods and the sewage is direct to the Eel for it is all on the Eel's bank. We no longer canoe above the Collamer Dam."

- "We are interested in water quality since our property borders the river and our business depends on it."
- 10 No comments

Several people from within the watershed contacted the Watershed Coordinator regarding concerns they have within the watershed. These include:

Silver Lake sedimentation and waste treatment discharge violations due to failing dam.

Severe field run-off, possibly containing pesticides and nutrients as well as sediment from a bottomland field in Laketon, near the old mill race.

Large amount of trash dumped along streambank near the Laketon bog.

Laketon – possible waste water treatment facility

The second annual public meeting was held on February 23, 2010 at Manchester College. An announcement of the meeting was sent to the local media. 50 people attended this meeting. The purpose of this meeting was to educate, inform and update the community on the progress of the Initiative, and to gather information from the community. The 5th draft of the Watershed Management Plan was made available as a hard copy and on CD. An Evaluation Form was distributed to all in attendance to determine if the format of the meeting was helpful to the community. 19 people responded that the information shared was very interesting and informative and that they learned a lot about the watershed and what the water quality concerns are in the Eel River. Good discussion regarding the removal of dams, suspended sediment, excessive nutrients, the level of biotic community followed the meeting. Additionally, there were concerns raised regarding Laketon and their work toward establishing a waste water treatment plant. There was one participant from the Whitley County area of the Eel River, which is outside of the Middle Eel River, concerning dredging, ditching and debrushing in Whitley County.

1.7 Middle Eel River Watershed Location

There are two Eel Rivers in Indiana, one in northern Indiana (HUC 05120104) and one in west central Indiana (HUC 05120203). The focus of this study is the Northern Eel River. The watershed of the Eel River comprises a land area of 529,968 acres (827.07 square miles) and is a state designated canoe/boating route (Figure 2-1) (Natural Resources Commission 2007).

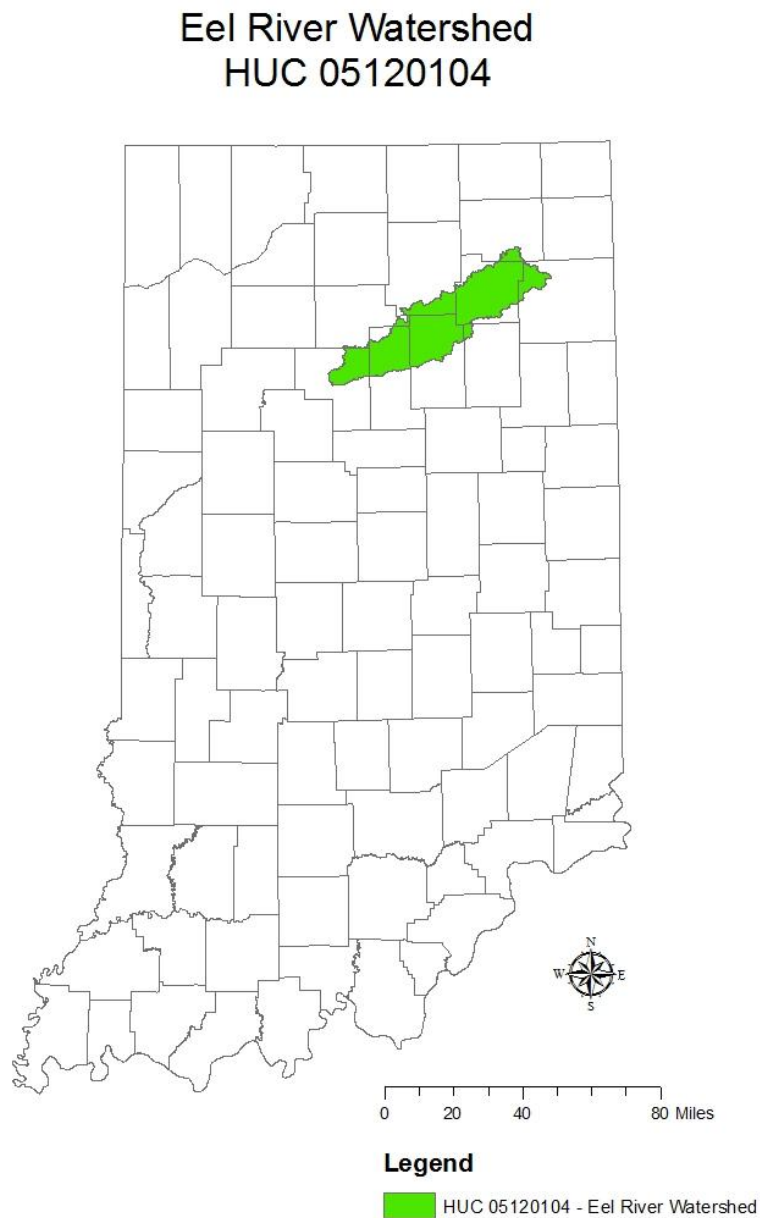


Figure 1-4 Eel River Watershed – 8 Digit HUC 05120104

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Many of the Eel River's tributaries, and the mainstem of the Eel River, are on the 2008 Indiana Impaired Water 303(d) List for *Escherichia coli* (*E. coli*), Polychlorinated biphenyls (PCBs) and mercury in fish tissue, low dissolved oxygen, impaired biotic community, and excessive nutrients (Table 3-1 pg 3-18 and Figure 3-12, Pg 3-19).

The 30 mile stretch of the Eel River between North Manchester and Mexico, IN is the focus of this project (Figure 1-5).

Middle Eel River Watershed 10 Digit HUCs 0512010405 & 0512010406

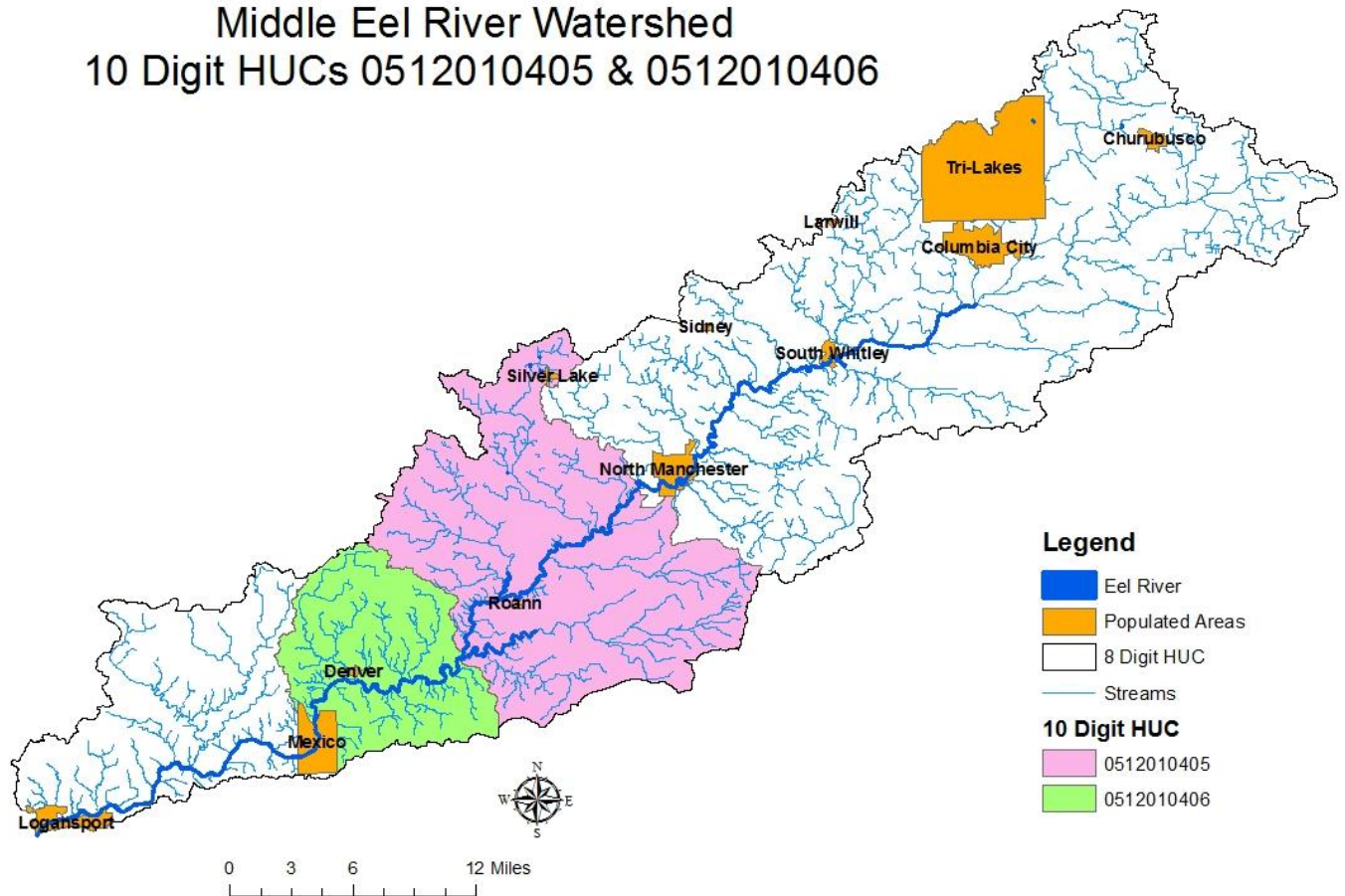


Figure 1-5. Middle Eel River Watershed - 10 Digit HUCs within Eel River 8 Digit HUC

